Amendments to the Claims:

This listing of claims replaces all prior versions, and listings, of the claims in the applications.

Listing of Claims:

Claim 25 and 68 were amended in the June 23 office action.

Claims 1 - 24, 29-32, 49-65, previously withdrawn.

Claims 26-28, 33-34, 36-42, 46-48, previously cancelled.

1. (Previously withdrawn) A method for producing an integrated optical waveguide with a patterned upper cladding comprising the steps of: a) depositing a core layer onto a substrate, optionally with a lower cladding layer there between; b) patterning the core layer to provide a light transmissive element; c) depositing an upper cladding layer onto the light transmissive element; and d) patterning the upper cladding to provide at least one region in which the light transmissive element is air clad.

2. (Previously withdrawn) A method according to claim 1 wherein the light transmissive element is air clad on at least one end.

3. (Previously withdrawn) A method according to claim 2 wherein the light transmissive element comprises a waveguide and lens as a unitary body.

4. (Previously withdrawn) A method according to claim 3 wherein the lens has an air clad curved surface.

5. (Previously withdrawn) A method according to claim 1 wherein the light transmissive element is air clad on at least one side.

6. (Previously withdrawn) A method according to claim 5 wherein the light transmissive element comprises a waveguide with a bend.

7. (Previously withdrawn) A method according to claim 6 wherein the waveguide has an air clad surface in the region of the bend.

8. (Previously withdrawn) A method according to claim 7 wherein the waveguide has an air clad surface on the side corresponding to the outside of the bend.

9. (Previously withdrawn) A method according to claim 1 wherein a portion of the upper cladding matches a portion of the light transmissive element.

10. (Previously withdrawn) A method according to claim 1 wherein a top portion of the light transmissive element is air clad.

11. (Previously withdrawn) A method according to claim 1 wherein the upper cladding layer comprises a polymeric material.

12. (Previously withdrawn) A method according to claim 11 wherein the polymeric material

comprises a thermally curable polymer.

13. (Previously withdrawn) A method according to claim 12 wherein the thermally curable polymer is a siloxane polymer.

14. (Previously withdrawn) A method according to claim 11 wherein the polymeric material comprises a polymer curable by actinic radiation.

15. (Previously withdrawn) A method according to claim 14 wherein the actinic radiation is ultraviolet light.

16. (Previously withdrawn) A method according to claim 14, wherein the polymeric material is a siloxane polymer.

17. (Previously withdrawn) A method according to claim 1 wherein the upper cladding layer is patterned by selective curing with a patterned heat source and uncured material dissolved with a solvent, whereby cured material is insoluble in the solvent.

18. (Previously withdrawn) A method according to claim 1 wherein the upper cladding layer is patterned by selective curing with a patterned source of ultraviolet light and uncured material dissolved with a solvent, whereby cured material is insoluble in the solvent.

19. (Previously withdrawn) A method according to claim 1 wherein the substrate comprises

silicon, quartz, fused silica, glass, or a polymeric material.

20. (Previously withdrawn) A method according to claim 19 wherein the polymeric material comprises an acrylate, Perspex, polymethylmethacrylate, polycarbonate, polyester, polyethyleneterephthalate or PET.

21. (Previously withdrawn) A method according to claim 1, wherein the lower cladding layer, where present, and light transmissive element comprise materials selected from polymeric materials, glass and semiconductors.

22. (Previously withdrawn) A method according to claim 21, wherein the polymeric materials comprise a polymer curable by actinic radiation.

23. (Previously withdrawn) A method according to claim 22, wherein the actinic radiation is ultraviolet light.

24. (Previously withdrawn) A method according to claim 22, wherein the polymeric material is a siloxane polymer.

Claim 25 (Previously ~~Amended~~ presented): An integrated optical waveguide comprising:

a substrate;

a light transmissive element comprising a waveguide and a lens as a unitary body;

an upper cladding patterned to have at least one region in which the light transmissive element is

air clad ; and

wherein said lens has a face perpendicular to the substrate and focuses and collimates light in a plane parallel to the substrate and a lens face width at least 50% larger than the waveguide.

26. (Previously cancelled) An integrated optical waveguide according to claim 25 wherein the light transmissive element is air clad on at least one end.

27. (Previously cancelled) An integrated optical waveguide according to claim 26, wherein the light transmissive element comprises a waveguide and lens as a unitary body.

28. (Previously cancelled) An integrated optical waveguide according to claim 27, wherein the lens has an air clad curved surface.

29. (Previously withdrawn) An integrated optical waveguide according to claim 25 wherein the light transmissive element is air clad on at least one side.

30. (Previously withdrawn) An integrated optical waveguide according to claim 29, wherein the light transmissive element comprises a waveguide with a bend.

31. (Previously withdrawn) An integrated optical waveguide according to claim 30, wherein the waveguide has an air clad surface in the region of the bend.

32. (Previously withdrawn) An integrated optical waveguide according to claim 31, wherein the

waveguide has an air clad surface on the side corresponding to the outside of the bend.

33. (Previously cancelled) An integrated optical waveguide according to claim 25 wherein a portion of the upper cladding matches a portion of the light transmissive element.

34. (Previously cancelled) An integrated optical waveguide according to claim 25 wherein a top portion of the light transmissive element is air clad.

Claim 35 (Previously presented): An integrated optical waveguide according to claim 25, wherein the upper cladding is chosen from a group comprising an organosilicon condensate polymer.

36. (Previously cancelled) An integrated optical waveguide according to claim 35, wherein the polymeric material comprises a thermally curable polymer.

37. (Previously cancelled) An integrated optical waveguide according to claim 36, wherein the thermally curable polymer is a siloxane polymer.

38. (Previously cancelled) An integrated optical waveguide according to claim 35, wherein the polymeric material comprises a polymer curable by actinic radiation.

39. (Previously cancelled) An integrated optical waveguide according to claim 38, wherein the actinic radiation is ultraviolet light.

40. (Previously cancelled) An integrated optical waveguide according to claim 39, wherein the polymeric material is a siloxane polymer.

41. (Previously cancelled) An integrated optical waveguide according to claim 25, wherein the upper cladding is patterned by selective curing with a patterned heat source and uncured material dissolved with a solvent, whereby cured material is insoluble in the solvent.

42. (Previously cancelled) An integrated optical waveguide according to claim 25, wherein the upper cladding is patterned by selectively curing with a patterned source of ultraviolet light and uncured material dissolved with a solvent, whereby cured material is insoluble in the solvent.

Claim 43 (Previously presented): An integrated optical waveguide according to claim 25, wherein the substrate comprises silicon, quartz, fused silica, glass, or a polymeric material.

Claim 44 (Previously presented): An integrated optical waveguide according to claim 43, wherein the polymeric material comprises an acrylate, Perspex, polymethylmethacrylate, polycarbonate, polyester, polyethyleneterephthalate or PET.

Claim 45 (Previously presented): An integrated optical waveguide according to claim 25 wherein the light transmissive element comprises materials selected from polymeric materials, glass and semiconductors.

46. (Previously cancelled) An integrated optical waveguide according to claim 45, wherein the polymeric materials comprise polymers curable by actinic radiation.

47. (Previously cancelled) An integrated optical waveguide according to claim 46, wherein the actinic radiation is ultraviolet light.

48. (Previously cancelled) An integrated optical waveguide according to claim 47, wherein the polymeric material is a siloxane polymer.

49. (Previously withdrawn) A method of fabricating an optical waveguide device with a patterned upper cladding, comprising the steps of: a) forming a patterned blocking layer opaque to a predetermined wavelength on a portion of a substrate transparent to the predetermined wavelength; b) depositing a core layer on said patterned blocking layer and/or on an uncovered portion of the substrate; c) patterning the core layer from above to provide a light transmissive element; d) depositing an upper cladding layer, which comprises a material curable by exposure to light of the predetermined wavelength, on the light transmissive element and/or on the patterned blocking layer and/or on an uncovered portion of the substrate; e) irradiating said upper cladding layer from below with light of the predetermined wavelength, to cure those portions of said upper cladding layer not positioned above said patterned blocking layer; and f) removing non-cured portions of said upper cladding layer.

50. (Previously withdrawn) A method of fabricating an optical waveguide device with a

patterned upper cladding, comprising the steps of: a) forming a patterned blocking layer opaque to a predetermined wavelength on a portion of a substrate transparent to the predetermined wavelength; b) depositing a lower cladding layer on said blocking layer and/or on an uncovered portion of said substrate; c) depositing a core layer on said lower cladding layer; d) patterning the core layer from above to provide a light transmissive element; e) depositing an upper cladding layer, which comprises a material curable by exposure to light of the predetermined wavelength, on said light transmissive element and/or on an uncovered portion of said lower cladding; f) irradiating said upper cladding layer from below with light of the predetermined wavelength, to cure those portions of said upper cladding layer not positioned above said patterned blocking layer; and g) removing non-cured portions of said upper cladding layer.

51. (Previously withdrawn) A method according to claim 49 wherein the substrate comprises silicon, quartz, fused silica, glass, or a polymeric material.

52. (Previously withdrawn) A method according to claim 51, wherein the polymeric material comprises an acrylate, Perspex, polymethylmethacrylate, polycarbonate, polyester, polyethyleneterephthalate or PET.

53. (Previously withdrawn) A method according to claim 49, wherein the patterned blocking layer is formed by screen printing.

54. (Previously withdrawn) A method according claim 49 wherein the upper cladding layer comprises a polymer curable by exposure to light of the predetermined wavelength.

55. (Previously withdrawn) A method according to claim 54, wherein the predetermined wavelength is in the ultraviolet region.

56. (Previously withdrawn) A method according to claim 55, wherein the polymer is a siloxane polymer.

57. (Previously withdrawn) A method according to claim 49, wherein the patterned blocking layer comprises a compound that absorbs light of the predetermined wavelength.

58. (Previously withdrawn) A method according to claim 49, wherein the patterned blocking layer comprises a pattern of scattering surfaces, wherein the scattering surfaces scatter light of the predetermined wavelength, effectively blocking transmission of said light.

59. (Previously withdrawn) A method according to claim 58, wherein the scattering surfaces are produced by mechanical abrasion.

60. (Previously withdrawn) A method according to claim 58, wherein the scattering surfaces are produced by chemical etching.

61. (Previously withdrawn) A method of fabricating an optical waveguide device with a patterned upper cladding, comprising the steps of: a) depositing a lower cladding layer on a substrate transparent to light of a predetermined wavelength; b) forming a patterned blocking

layer opaque to light having the predetermined wavelength on said lower cladding layer; c) depositing a core layer on said blocking layer and/or on an uncovered portion of the lower cladding layer; d) patterning the core layer from above to provide a light transmissive element; e) depositing an upper cladding layer, which comprises a material curable by exposure to light of the predetermined wavelength, on said light transmissive element and/or on said blocking layer and/or on said lower cladding layer; f) irradiating said upper cladding layer from below with light of the predetermined wavelength, to cure those portions of said upper cladding layer not positioned above said patterned blocking layer; and g) removing non-cured portions of said upper cladding layer.

62. (Previously withdrawn) A method according to claim 61, further comprising the steps of: i) forming a lift-off layer after forming the patterned blocking layer and before depositing the lower cladding layer; and ii) removing the lift-off layer after removal of the non-cured portions of said upper cladding layer, to separate the lower cladding layer, light transmissive element and patterned upper cladding from the substrate.

63. (Previously withdrawn) A method according to claim 61, further comprising the steps of: i) forming a lift-off layer on the substrate before depositing the lower cladding layer; and ii) removing the lift-off layer after removal of the non-cured portions of said upper cladding layer, to separate the lower cladding layer, patterned blocking layer, light transmissive element and patterned upper cladding from the substrate.

64. (Previously withdrawn) A method according to claim 61, wherein the substrate comprises

silicon, quartz, fused silica, glass, or a polymeric material.

65. (Previously withdrawn) A method according to claim 64, wherein the polymeric material comprises an acrylate, Perspex, polymethylmethacrylate, polycarbonate, polyester, polyethyleneterephthalate or PET.

Claim 66 (Previously presented): An integrated optical waveguide according to claim 25 including a lower cladding layer between the substrate and the light transmissive element.

Claim 67 (Previously presented): An integrated optical waveguide according to claim 66 wherein the lower cladding layer comprises materials selected from polymeric materials, glass and semiconductors.

Claim 68 (Previously ~~Amended~~ presented): An integrated optical waveguide comprising:
a substrate;
one or more light transmissive elements each comprising a waveguide and a lens as a unitary body; and
one or more cladding layers comprising at least one cladding layer patterned to have at least one region with the cladding material removed from at least one region of the one or more light transmissive elements; wherein the lens has a face perpendicular to the substrate and a lens face width at least 50% larger than the waveguide and focuses and collimates light in a plane parallel to the substrate.

Claim 69 (Previously presented) The integrated optical waveguide of claim 68 wherein at least one of said one or more cladding layers is composed of an organosilicon condensate polymer.

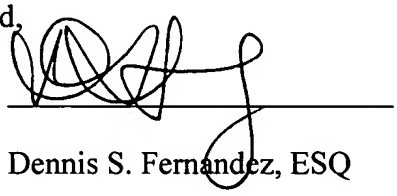
Claim 70 (Previously presented) The integrated optical waveguide of claim 68 wherein said one or more light transmissive elements and at least one of said one or more cladding layers are composed of materials chosen from a group comprising organosilicon condensate polymers, polymers, quartz, glass and semiconductors.

Claim 71 (Previously presented) The integrated optical waveguide of claim 68 wherein said substrate is composed of materials chosen from a group comprising silicon, quartz, fused silica, glass, or a polymeric material.

In the Office Action Response of October 3 Applicant did not remove the correction identifiers as presented in the Office Action of June 23, 2006; no changes to claims 25 and 68 were made in the Oct. 3 response. Applicant has complied with the Examiner's request to correct claims 25 and 68 status identifiers and has removed the correction identifiers as submitted in the June 23 response.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,



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